

**SEMICONDUCTOR DEVICE PROVIDED WITH TRANSPARENT SWITCHING ELEMENT****Publication number:** JP11505377 (T)**Publication date:** 1999-05-18**Inventor(s):****Applicant(s):****Classification:**

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WO9706554 (A2)

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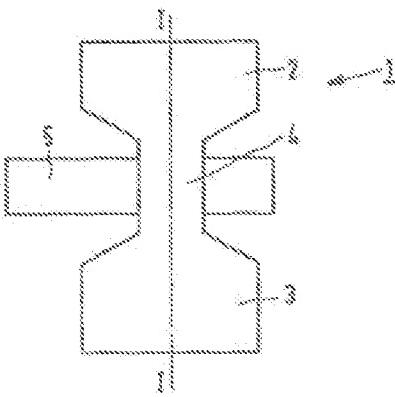
EP0820644 (A2)

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Abstract not available for JP 11505377 (T)

Abstract of corresponding document: **WO 9706554 (A2)**

The invention relates to a semiconductor device with a transparent switching element (1) with two connection electrodes (2, 3) of a transparent material and an interposed transparent channel region (4) of a semiconductor material provided with a transparent gate electrode (5) of a conductive material, separated from the channel region (4) by a transparent insulating layer (6). According to the invention, the semiconductor material comprises a degenerate semiconductor material with a basic material having a bandgap (10) between conduction band (11) and valence band (12) of electrons greater than 2.5 eV and a mobility of charge carriers greater than  $10 \text{ cm}^2/\text{Vs}$  provided with dopant atoms which form a fixed impurity energy level (13) adjacent or in the valence band (12) or conduction band (11) of the basic material. The degenerate semiconductor material according to the invention is transparent because the absorption of visible light is not possible owing to the great bandgap (10), while also no absorption of visible light takes place through the impurity energy levels (13). The device according to the invention is capable of comparatively fast switching.

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